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TRAINING COURSE IN WOMEN'S HEALTH

Module Four

**Vaginal Infections
and Sexually
Transmitted Diseases**

International Prototype

Developed by the International Women's Health Coalition and converted to self-instructional format by the Institute for Development Training, this manual, and others in the series, is intended as a prototype only. For effective use in training programs, a country adaptation focused on the needs of a specific type of trainee, followed by pre-testing, is considered essential. For information on sources of funding for adaptation workshops, pre-tests and multiple copies of the adapted manual contact:

Institute for Development Training
P.O. Box 2522
Chapel Hill, NC 27515-2522
U.S.A.



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INTERNATIONAL WOMEN'S HEALTH COALITION

684 Park Avenue
New York, N.Y. 10021 U.S.A.
(212) 628-3700
Telex 424 064

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Dear Clinician:

This manual was prepared for your use by a number of able and committed persons, dedicated, as you are, to improving the health care in your country. Every effort has been made to include the most accurate and up-to-date essentials of gynecological health care.

The material was designed and developed by the International Women's Health Coalition, and has been adapted for self-instructional use by the Institute for Development Training.

We do know, however, that as a prototype the material is not suitable for use in all training situations. We hope you will feel free to change anything that is inappropriate.

Your task is a significant and important one. We sincerely hope this manual plays a small part in helping you with your work.

Yours for good health.

Sincerely,

Joan B. Dunlop
President

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Introduction to Module Four

Module Four - "Vaginal Infections and Sexually Transmitted Diseases" - is one of a series of modules which make up the Training Course in Women's Health. The preceding modules have covered the anatomy and function of the female reproductive system; the anatomy, function, and common disorders of the female urinary system; and basic examination procedures. You should be thoroughly familiar with this information before reading this module.

Module Four focuses on the most common infectious disorders of the female reproductive system. Included are a discussion of the causes, signs and symptoms, specific diagnostic procedures and recommended treatments for five common vaginal infections and ten types of sexually transmitted diseases and infections. Also included in this module are follow-up recommendations for Pap test results for cervical cancer. It's important for you to know this information since you may encounter these conditions in women patients. Reading and studying this information carefully will help you recognize, evaluate, and treat these health problems in women.

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Instructions for the Learner

This module, which is one of a series of modules, is self-instructional. Self-instruction is a method by which you, the learner, learn by yourself from carefully sequenced materials. The module is divided into short sections of information and each of these sections is followed by a series of questions which give you a chance to practice using the information you have learned. Answers to these questions are given so that you can check your understanding of the information.

The self-instructional method allows you to learn at your own speed and enables you to consistently check your progress in learning the information.

Follow the steps below in order to proceed through this self-instructional module in the most effective way:

1. Read the objectives for the module. They will outline for you what you will learn and be able to do after completing the module.
2. Take the Pre-test to get an idea of what you already know and what you need to learn.
3. Read and study the information in Section 1.
4. Answer the practice questions following the section without looking back at the information. Use a separate sheet of paper.
5. Check your answers using the answer sheet on the page following the questions.
6. If any of your answers are incorrect, reread the information in the section and try to answer the questions again.
7. When all your answers are correct, go on to the next section.
8. Proceed through the rest of the sections in the same way: read section; answer questions; check answers; reread section if necessary.
9. Take the Post-test after you have completed the entire module.
10. Check your answers to the Post-test using the answer sheet at the end of the module.

Prerequisites and Objectives

Prerequisites

As a prerequisite for this module you must have a basic knowledge and understanding of the following terms, concepts and procedures:

1. anatomy and function of female reproductive system (Module One)
2. metric measurement
3. procedures for preparing specimen slides for microscope examination, including use of Gram stain and dark field microscopy
4. procedures for pelvic examination and Pap smear (Module Three)
5. procedure for blood test for syphilis
6. procedure for cauterization of cervix

Main Objective

The learner will be able to describe the causes, symptoms, and possible treatments for infections and inflammation of the female reproductive track, both those which are sexually transmitted and those which are not usually acquired in this way.

Sub-objectives

After completing the module the learner will be able to:

1. describe the difference between normal and abnormal vaginal discharge;
2. list 4 possible causes of abnormal vaginal discharge;
3. state 3 general factors favoring vaginal infection;
4. given the symptoms of 5 types of vaginal infections, deduce the name of the infection, specify its cause, and prescribe an appropriate treatment:
 - (a) moniliasis
 - (b) trichomoniasis
 - (c) nonspecific vaginitis
 - (d) Gardnerella vaginitis
 - (e) cervicitis

5. identify the two characteristics shared by the micro-organisms causing sexually transmitted diseases (STD);
6. state five general measures that can reduce the chance of infection by STD;
7. given the symptoms of ten types of STD, deduce the name of the disease, specify its cause, and prescribe an appropriate treatment:
 - (a) syphilis
 - (b) gonorrhoea
 - (c) chlamydia trachomatis
 - (d) lymphogranuloma venereum (Bubos)
 - (e) granuloma inguinale
 - (f) chancroid
 - (g) genital warts
 - (h) genital herpes
 - (i) infestations (scabies/lice)
 - (j) Pelvic inflammatory Disease (PID)
8. describe a simple treatment protocol for cervical/urethral discharge, based on symptoms, in the absence of diagnostic laboratory facilities;
9. describe a simple treatment protocol for single genital ulcers, based on symptoms, in the absence of diagnostic laboratory facilities; and
10. using the given classifications for Pap test results, describe the proper follow-up treatment for some sample cases.

Pre-test

To the Learner: Before starting this module, try taking the following test. The test will give you an idea of what you already know and what you will learn in this module. You will take the same test again after you have completed the module. A comparison of your two sets of answers will give you an idea of how much you have learned from this module.

Record your answers on a separate sheet of paper. You will find the correct answers to this Pre-test in the last section of this module.

1. Name three general factors that may encourage the onset of infection or disease in the female reproductive system.
2. Describe normal vaginal discharge, including color and consistency changes over a monthly cycle.
3. State three characteristics of abnormal vaginal discharge.
4. Identify the two characteristics shared by the micro-organisms which cause sexually transmitted diseases or infections.
5. Name five measures you can recommend to your women patients to reduce their chances of infection by STD.

Below are descriptions of the symptoms of patients with five different vaginal infections. For each situation deduce the name of the most likely infection, give its cause, and prescribe a possible treatment. Select from the following infections: moniliasis, trichomoniasis, nonspecific vaginitis, Gardnerella vaginitis, cervicitis.

6. A patient with a young baby has a persistent yellowish vaginal discharge. She reports pain upon intercourse, low back pain, and spotting between periods.

Most likely infection:

Cause of infection, contributing factors:

Treatment (include recommendations to patient):

7. The patient complains of itching and soreness of the vulva, and a smelly vaginal discharge. Upon examination the discharge appears foamy and yellow-green in color.

Most likely infection:

Cause of infection, method of transfer:

Treatment (and recommendations to patient):

8. The patient has a paste-like vaginal discharge with an unpleasant odor. It is grayish in color. Examining a specimen of the discharge under the microscope you note a lack of normal lactobacilli.

Most likely infection:

Cause:

Treatment and recommendations:

9. The patient has a thick white discharge which has a strong odor. She complains of itching and irritation in the genital area.

Most likely infection:

Cause:

Treatment and recommendations:

10. The patient reports pain while urinating. Upon speculum examination you note a heavier than normal white vaginal discharge. You cannot identify a specific pathogen after examining the discharge under a microscope.

Most likely infection:

Cause:

Treatment and recommendations:

Following are descriptions of the symptoms of patients with ten different types of sexually transmitted diseases. For each case deduce the name of the disorder, give its cause and prescribe a possible treatment. Select from the following diseases and infestations: syphilis, gonorrhea, chlamydia trachomatis, lymphogranuloma venereum (bubos), granuloma inguinale, chancre, genital warts, genital herpes, scabies/lice, Pelvic Inflammatory Disease.

11. The patient complains of small sores on the vulva which cause itching and soreness. You note the sores give off a colorless discharge.

Most likely condition:

Cause:

Treatment and recommendations:

12. The patient feels generally unwell - has a low fever, backaches, pain during intercourse, and, lately, more pain than usual during her period. Glands in the groin are swollen.

Most likely condition:

Cause:

Treatment and recommendations:

13. The patient has a painful sore on the labia. Glands in the groin are swollen.

Most likely condition:

Cause:

Treatment:

14. The patient has severe abdominal cramps, chills, and fever. She has had an abnormal vaginal discharge for some time. The pelvic exam is very painful for her. You rule out gonorrhea after examining the cervical discharge under the microscope.

Most likely condition:

Cause:

Treatment:

15. The patient complains of constant itching in the genital area, which gets worse in warm weather. You examine her and notice no unusual kind of vaginal discharge, but note small lumps on the mons veneris.

Most likely condition:

Cause:

Treatment:

16. The patient has abdominal pain, low fever and menstrual disturbances. Upon examination you note cervicitis which has a pus-filled discharge. Patient reports being treated for gonorrhea previously.

Most likely condition:

Cause:

Treatment:

17. The patient is not in pain but has noticed a red lesion on the perineum.

Most likely condition:

Cause:

Treatment:

18. The patient reports feeling unwell with bodily aches and pains, loss of appetite, headaches. She has a slight rash on the back of the legs.

Most likely condition:

Cause:

Treatment:

19. The patient has large festering sores in the glandular area of the groin. You note scar tissue from previous outbreaks. The patient reports general sickness - low fever and frequent headaches.

Most likely condition:

Cause:

Treatment.:

20. The patient reports many small bumps on the vulva and within the vagina. Upon examination you find them to be pinkish, soft, and moist.

Most likely condition:

Cause:

Treatment:

21. Describe a simple treatment protocol for cervical/urethral discharge, for use where laboratory diagnosis is not possible.

22. Describe a simple treatment protocol for single genital ulcers, for use where laboratory diagnosis is not possible.

23. What action should you take on the following results from a Pap test?

- Atypical cells present, repeat to rule out:

- Grade 2 CIN:

- Squamous cell carcinoma:

Part I:
Vaginal Infections and Cervicitis

5 infections are described:

1. Moniliasis
2. Trichomoniasis
3. Gardnerella Vaginitis
4. Nonspecific Vaginitis
5. Cervicitis

1. Vaginal Infections: Introduction

Many bacteria live harmlessly in the normal acidic environment of the vagina. This acidic environment helps to restrict the growth of harmful organisms. The delicate balance in the vagina can be upset by several factors. Factors favoring infection include:

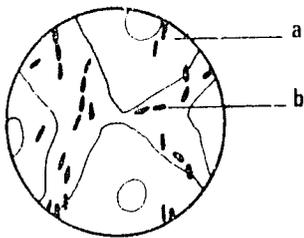
1. lowered resistance, poor nutrition, or illness
2. cuts or abrasions
3. all factors affecting the quantity and acidity of vaginal mucus, including: menstruation, pregnancy, birth control pills, other hormones, antibiotics, douching (other than medicinal douches), diabetes, prediabetes, or menopause
4. most vaginal infections are sexually transmitted

Changes in vaginal discharge may indicate infection or disease; therefore, you should know the difference between normal and abnormal vaginal discharge.

Normal Vaginal Discharge

In addition to menstruation, normal vaginal discharge consists of:

1. clear mucus from the cervix, starting about one week after menstruation, getting thicker and in greater quantity at the time of ovulation, and decreasing in quantity after ovulation
2. clear fluid that has "sweated" through the walls of the vagina, usually a small amount but more in pregnancy and in times of emotional stress, and much more during sexual excitement
3. dead cells being shed from the vaginal wall



This illustration gives an indication of the appearance of normal vaginal discharge under the microscope.

Normal Vaginal organisms

- a. dead mucus tissue cells
- b. lactobacillus bacteria

Abnormal Vaginal Discharge

The signs of vaginal disorder are irritation, unpleasant odor, or an unusually colored discharge. Irritation includes itching, chafing, soreness, burning, or redness of the vagina, vulva or of the inner thighs.

There are several possible causes of abnormal vaginal discharges:

1. foreign bodies (tampons, contraceptive diaphragms)
2. postmenopausal atrophy (the drying of the vaginal canal after menopause)
3. abnormal cervical changes (cervical erosion and infection)
4. vaginal infection including moniliasis, trichomoniasis, gonorrhea, and non-specific vaginitis

The infections in number four will be covered in more detail in the following sections of this unit.

Practice Questions

1. Name three general factors that favor infections in the vagina.
2. Describe the difference between normal and abnormal vaginal discharge.
3. List four possible causes of abnormal vaginal discharge.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Factors that favor vaginal infections include any of the following:
 - (1) lowered resistance
 - (2) poor nutrition
 - (3) illness
 - (4) cuts or abrasions
 - (5) factors that affect the quantity or acidity of vaginal mucus, including: menstruation, pregnancy, birth control pills, other hormones, antibiotics, non-medicinal douches, diabetes, prediabetes, menopause
2. Normal vaginal discharge is usually clear just after menstruation, getting thicker and in greater quantity at the time of ovulation.

Abnormal discharge may have an unpleasant odor, have an unusual color or consistency, or cause irritation.
3. The five possible causes of abnormal vaginal discharge are:
 - (1) foreign bodies
 - (2) postmenopausal drying of the vagina
 - (3) abnormal cervical changes
 - (4) vaginal infection

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 2 on the next page.

2. Moniliasis and Trichomoniasis

The next 3 information sections contain descriptions of the causes, signs, symptoms, and recommended treatments for five types of vaginal infections: (1) moniliasis; (2) trichomoniasis; (3) Gardnerella vaginitis; (4) nonspecific vaginitis; and (5) cervicitis.

Moniliasis

(Candidiasis or Thrush)

Description and Cause

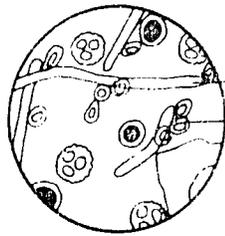
Moniliasis is caused by a yeastlike fungus called Monilia albicans. This fungus is usually present in the vagina and is not harmful unless it begins to multiply rapidly. Anything that disturbs the balance of the normal organisms in the vagina may cause this infection, including antibiotics, oral contraceptives, diabetes, and pregnancy. Moniliasis may also be transmitted by sexual intercourse.

Symptoms

Symptoms are a thick, curd-like discharge that smells of yeast; itching, burning, soreness and inflammation of the vagin and/or vulva.

Diagnosis

Diagnosis is best made by a speculum examination confirming the clinical impression of a thick, white, irritating discharge. A drop of the vaginal secretion may also be examined with a microscope, by mixing it with a drop of 10 per cent potassium hydroxide (KOH) on a slide. Put on cover clip and examine under a microscope (see illustration).



Moniliasis

- a. yeast masses (hyphae)
- b. yeast buds

Treatment

There are several treatments for moniliasis. Any of the following can be used:

1. Miconazole cream: one applicator full inserted vaginally at bedtime for 7 days
2. Nystatin: 100,000 units to be inserted vaginally twice daily for 7 days
3. Clotrimazole: one suppository to be inserted vaginally for 7 days
4. Gentian violet vaginal inserts: to be inserted into the vagina once a night for 14 nights
5. Vinegar douche: to be used once a week (45 ml of vinegar in one liter of boiled water)

If there are recurrent infections, both sexual partners must be treated. Effective shorter, more concentrated treatments are becoming available.

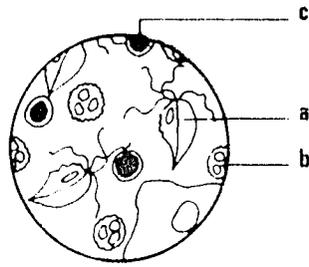
Trichomoniasis

Description and Cause

Trichomoniasis is caused by a one-celled animal parasite and is one of the most common infectious causes of vaginal discharge. About 50 per cent of all women have it at some time; about 15 per cent develop symptoms. The trichomonad can survive outside the vagina for about six hours on moist objects like wash cloths. It is usually transmitted by sexual intercourse. Men can carry the trichomonads but they do not have any symptoms. Women may also be asymptomatic but often will have symptoms.

Symptoms

Symptoms include a greenish-yellow, foamy discharge that has an unpleasant odor, severe itching, and soreness of the vagina and vulva. Chronic trichomoniasis may be revealed by a grayish discharge with or without other symptoms. On examination, the cervix may show punctate red "strawberry" spots.



Trichomoniasis

- a. one-celled animal parasites
- b. c. dead white blood cells (pus)

Treatment

There is one preferred treatment for trichomoniasis.

1. Metronidazole: 250 mg orally 3 times daily for 7 days, or 2 gms (i.e., 8 tablets) in a single daily dose.

It is important to treat the sexual partner similarly during the same interval. Use condoms to protect against reinfection during coitus for seven days, or until both partners are cured.

Strongly emphasize that the woman should NOT use this drug if she is pregnant or suspects pregnancy. Lactating women can be treated with the single dose regimen but should interrupt breastfeeding for 24 hours.

Caution: Neither the patient nor her mate should be given this drug if there is a history of peptic ulcers or blood or central nervous system disorders. Both partners should be told to abstain from alcohol (which can cause serious side effects) for seven days.

If metronidazole is contraindicated or unavailable, then use:

2. Vinegar douches 3 times weekly (45 ml of vinegar to 1 litre of boiled water).
3. Povidone-iodine vaginal gel: one applicator full well into the vagina for 30 days.
4. Prophylaxis.

Since only the woman can be treated in 2 and 3, her mate should use condoms to prevent the woman from being reinfected.

Practice Questions

1. Moniliasis and trichomoniasis are two of the most common vaginal infections. One is caused by an animal parasite, the other by a yeast-like fungus. Name the cause of each infection.

(a) Moniliasis	Cause: _____
(b) Trichomoniasis	Cause: _____
2. A female patient complains of vaginal itching, soreness, and a greenish-yellow discharge which is foamy. Most likely condition:

(a) Moniliasis
(b) Trichomoniasis
3. A female patient has a thick, curd-like, white vaginal discharge with a strong odor, itching, and soreness. Most likely condition:

(a) Moniliasis
(b) Trichomoniasis
4. Describe 4 possible treatments for moniliasis including 1 type of douche.
5. Describe the preferred method of treatment for trichomoniasis. Include dosage, directions to the patient, and contraindications.
6. Name 2 other treatments for trichomoniasis.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Moniliasis is caused by a yeast-like fungus.
Trichomoniasis is caused by a one-celled animal parasite.
2. The most likely condition is trichomoniasis.
3. The most likely condition is moniliasis.
4. The recommended treatments for moniliasis are:
 1. Miconazole cream: one applicator full inserted vaginally at bedtime for 7 days
 2. Nystatin: 100,000 units to be inserted vaginally twice daily for 7 days
 3. Clotrimazole: one suppository to be inserted vaginally for 7 days
 4. Gentian violet vaginal inserts: to be inserted into the vagina once a night for 14 nights
 5. Vinegar douche: to be used once a week (45 ml of vinegar in one liter of boiled water)

If there are recurrent infections both sexual partners must be treated.

5. The preferred method of treatment for trichomoniasis is Metronidazole: 250 mg orally, three times a day for 7 days; or 2 grams in a single daily dose. Both sexual partners must be treated. The patients should be told to use a condom during sexual intercourse and to abstain from alcohol. Pregnant women, or patients with a history of peptic ulcers, blood, or central nervous system disorders should not be given this drug.
6. Any of the following are alternate treatments for trichomoniasis.
 - (1) Vinegar douches 3 times weekly (45 ml vinegar for 1 liter of boiled water).
 - (2) Povidone-iodine vaginal gel: one applicator full well into the vagina for 30 days.
 - (3) Prophylaxis.

Since only the woman can be treated in (1) and (2), her mate should use a condom to prevent the woman from being reinfected.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 3 on the next page.

3. Gardnerella Vaginitis and Nonspecific Vaginitis

Gardnerella Vaginitis

Description and Cause

Gardnerella Vaginitis, formerly called Hemophilis Vaginitis, is caused by a minute rod-shaped bacillus. About 30 per cent of patients with trichomoniasis also have Gardnerella vaginitis. It is transmitted sexually.

Symptoms

A thin, paste-like discharge, usually gray but sometimes white or yellowish-green. After a few days the bacillus becomes the prevailing organism in the vagina, eliminating the naturally-occurring lactobacilli. The discharge usually has an unpleasant fishy odor.

Diagnosis

Diagnosis should be made on the basis of a speculum examination confirming clinical impressions of the discharge and, wherever possible, the appropriate laboratory examination. A drop of the discharge should be mixed with a drop of normal saline on a glass slide. Put on cover slip and examine under a microscope. Key to the diagnosis is the absence of lactobacilli (usually present on a slide prepared with saline, although they are eliminated in a slide prepared with KOH). Clue cells, or cells without a stippled appearance caused by bacteria adherent to the surface, indicate the presence of Gardnerella vaginitis.

Treatment

1. Metronidazole: 500 mg orally twice daily for 5 days.
2. Ampicillin: 500 mg orally 4 times daily for 5 days.
3. Sulfa cream (AVC, Sultrin or Triple Sulfa): One applicator full is inserted well into the vagina daily for two weeks. Or, if the woman is allergic to sulfa, use:
4. Oxytetracycline suppositories: The suppositories should be inserted well into the vagina once a night for 10 nights.

Since Gardnerella vaginitis is sexually transmitted, if a reinfection occurs, advise the woman of the importance of her mate using condoms during sexual intercourse and receiving treatment for this condition.

Nonspecific Vaginitis

Description and Cause

Nonspecific Vaginitis is the name for any unidentified vaginal infection. The cause of nonspecific vaginitis may be an unidentified parasite, fungus, or bacteria.

Symptoms

Symptoms may include white or yellow discharge; pain when urinating; the discharge may be streaked with blood. Vaginal walls may be inflamed. Pus may be present. Persistence of these symptoms after treatment for gonorrhea and/or chlamydia suggests this condition.

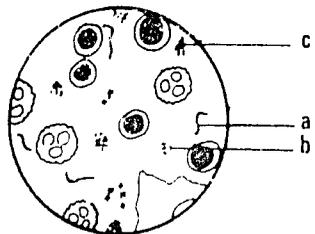
Treatment

The woman should be treated with:

1. Sulfa cream: One applicator full is inserted well into the vagina twice a day for two weeks.

If the patient is allergic to sulfa or if reinfection suggests that the causative bacteria may be sexually transmitted, then use:

2. Povidone-iodine douche: 30 ml of povidone-iodine in one-half liter of boiled and cooled water, to be used once a day for a week.



Nonspecific Vaginitis

- a. streptococci
- b. staphylococci
- c. bacilli
- d. absence of lactobacillus bacteria

Practice Questions

1. Describe the cause of each infection.
 - (a) Nonspecific vaginitis Cause: _____
 - (b) Gardnerella vaginitis Cause: _____

2. Name the infection indicated by the following symptoms. Choose from: moniliasis, trichomoniasis, nonspecific vaginitis, or Gardnerella vaginitis.
 - (a) gray or yellow-green paste-like discharge, with unpleasant odor

 - (b) thick white discharge, itching, soreness

 - (c) white or yellow discharge, pus

 - (d) greenish-yellow foamy discharge

3. The diagnosis of Gardnerella vaginitis may be assisted by examining vaginal discharge under the microscope. What would you look for?

4. Name the drug used for treatment of both nonspecific vaginitis and Gardnerella vaginitis. Describe its application in each case.

5. Describe an alternate treatment for each type of infection.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. (a) In nonspecific vaginitis the cause is not clearly identified. May be caused by fungus, parasite, or bacteria.
(b) Gardnerella vaginitis is caused by a rod-shaped bacillus and is spread through sexual contact.
2. (a) gray or yellow-green paste-like discharge, odor: Gardnerella vaginitis
(b) thick white discharge, itching, soreness: moniliasis
(c) white or yellow discharge, pus: nonspecific vaginitis
(d) greenish-yellow foamy discharge: trichomoniasis
3. The lack of lactobacilli and the presence of clue cells in the vaginal discharge would support the diagnosis of Gardnerella vaginitis.
4. Sulfa cream can be used to treat both infections.
Nonspecific vaginitis: one applicator twice a day for two weeks
Gardnerella vaginitis: one applicator daily for two weeks
5. Nonspecific vaginitis - Povidone-iodine douche: 30 ml in a half liter of boiled and cooled water, once a day for one week
Gardnerella vaginitis - any of the following may be used:
Oxytetracycline suppositories: one a night for 10 nights
Ampicillin: 500 mg orally four times a day, for five days
Metronidazole: 500 mg orally twice daily for five days

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 4 on the next page.

4. Cervicitis

Description and Cause

Cervicitis is an inflammation of the cervix and is quite common.

Any number of bacteria which ordinarily live in the vagina or which are introduced into the vagina can cause cervicitis. Viruses, protozoa (one-celled animals), fungi, or bacteria may trigger the inflammation. Cervicitis frequently occurs in women who are infected with gonorrhea or chlamydia. Also, birth control pills may produce a mild ectropion. Childbirth is another cause of cervicitis since tiny lacerations on the cervix resulting from delivery can become infected.

Symptoms

Often the only symptom is a persistent vaginal discharge. The discharge is generally white or yellowish. Spotting or bleeding between menstrual periods or after intercourse may occur. Pain may accompany intercourse. Urination may be associated with a burning sensation. Sometimes a woman suffers from low back pain and a slight fever.

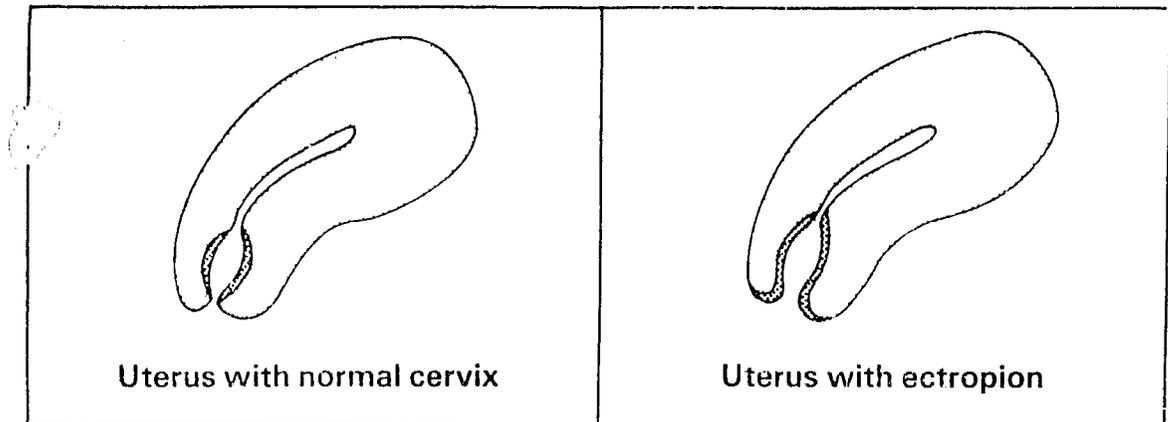
Diagnosis

Examine the cervix with a speculum inserted into the vagina, exposing the cervix. The vaginal and cervical canals should be cleared of discharge. The clinician will usually see a swollen, reddened cervix and a great deal of discharge coming from the cervical canal. The discharge should be examined under the microscope.

Take a cervical smear (Pap smear) if indicated. If cauterization is to be done it should be preceded by a Pap smear.

Cervical Erosion. Cervical erosion is a condition that may be present at the same time as cervicitis. Two types are described here. Ectropion is an irregular outgrowth of the columnar epithelial cells from the endocervical canal in which the area around the os becomes irregularly reddened and rough. Ectropion does not require treatment. This must be distinguished from eversion, a condition in which the external os is enlarged so that the endocervical epithelium appears to prolapse and the normal rugae or folds of the endocervix are visible.

Cervicitis is an infection of the endocervical glands; erosion may or may not be present.



Treatment

1. If the cause of the cervicitis is identified by microscope examination, treat according to the pathogen identified. Treat acute infections with appropriate antibiotics.
2. If the inflammation does not respond to antibiotic treatment the clinician may cauterize the cervix. Cauterization is the burning of the tissue in order to regenerate the squamous epithelium of the inflamed area.
3. If the inflammation of the epithelium around the external cervical os is associated with the vaginitis (monilial, trichomonad, nonspecific bacterial, or gonorrhoea), treat that specific condition.
4. If the erosion is severe, silver nitrate (AgNO_3) sticks or Trichloroacetic acid may be used sparingly to cauterize the eroded area. It is preferable to do this after a menses.
 - (1) Follow this application with the use of a sulfa containing vaginal cream.
 - (2) Advise the patient not to have sexual intercourse after cauterization of the cervix until the 10-day treatment is completed.
5. Cauterization may be repeated one time, 4 to 6 weeks after the original treatment, and repeat the sulfa containing cream.
6. If the erosion is not healed after 2 such treatments, refer the patient to a specialist.

Caution: Do not cauterize the cervix at the time of an IUD insertion.

Treatment for Chronic Cervicitis

1. Mild cervicitis: Cauterize the cervix during midcycle with 5% silver nitrate solution or 2% sodium hydroxide solution.
2. If deep erosion, refer to specialist for hot cautery.
3. Immediately after cautery, prescribe warm saline douches or sulpho-namide cream or suppositories locally for 3 to 4 days.

Practice Questions

1. List at least five causes of cervicitis.
2. Describe at least three possible symptoms of cervicitis.
3. Describe a treatment course for cervicitis.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Any of the following may cause cervicitis:
 - bacteria
 - fungus
 - protozoans
 - viruses
 - childbirth
 - gonorrhea

2. Any of the following may be symptoms of cervicitis:
 - persistent white or yellow discharge
 - spotting or bleeding after intercourse, between periods
 - painful intercourse
 - burning sensation upon urination
 - low back pain and fever

3. One treatment course for cervicitis is as follows:
 - (1) If pathogen is identified, treat with appropriate antibiotics.
 - (2) If cervicitis does not respond, cauterize with silver nitrate or Trichloroacetic Acid.
 - (3) Follow cauterization with use of a sulfa cream - 1 tube.
 - (4) If needed repeat cauterization 4-6 weeks later. Follow with sulfa cream.
 - (5) If not healed after 2 treatments, refer to a specialist.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 5 on the next page.

5. Pap Test Follow-up Recommendations

True cervical cancer is a slowly developing condition, which, if caught in the early stages, can be treated effectively. The Pap test allows one to detect the presence of abnormal kinds of cells in the epithelial surface layer of the cervix. The test can detect the presence of pre- or potentially cancerous cell changes as well as true cervical cancer itself, allowing the early detection of possible disease. It is important for the clinician to know how to interpret the results received from the laboratory, and to know appropriate medical recommendations.

There are several different ways of classifying Pap test results. The classification scheme given here is based on diagnostic terminology. Several of the categories are determined by the amount of dysplasia present in the cell sample. Dysplasia involves changes in the epithelial cells that are atypical, but do not resemble cancer cells. However, these abnormal changes are considered potentially cancerous - it is believed that even in cases of mild to moderate dysplasia 10-15% of the cases will progress to invasive cancer if untreated, with higher percentages for more severe dysplasia.

Results of the Pap test may be reported as follows:

- Normal or atypical benign: normal smear.
- Atypical cells present; repeat to rule out: Some abnormal cells are present, but may be caused by an infection, erosion, or other minor cervical disorder.
- Grade 1 CIN (cervical intraepithelial neoplasia): Mild dysplasia in which abnormal cells are limited to the basal (inner) layers of the squamous epithelium.
- Grade 2 CIN: Moderate dysplasia in which abnormal cells involve more than half the squamous epithelial layers of cells.
- Grade 3 CIN: Severe dysplasia in which all layers of the squamous epithelium are involved. Also included in this category is carcinoma-in-situ. Carcinoma-in-situ means cancer-like cells are noted, but are limited to the epithelium with no evidence of invasion.
- Invasive squamous cell carcinoma: Invasive cervical cancer.
- Adenocarcinoma: Invasive cancer of the glandular columnar cells of the endocervical canal.

Follow-up Recommendations

Normal smear requires no action.

Atypical results can be followed up and verified by a clinician. For an Atypical finding, examine the patient more closely for the possibility of cervical or vaginal infection. If present, treat with appropriate antibiotics. Repeat smear in three weeks time to verify.

Grade 1 CIN (mild dysplasia) - Carcinoma - Any findings of suspicious abnormal cells must be verified further by tissue biopsy or other procedures. Any results indicating dysplasia or cancer should be referred to a specialist for further diagnosis and/or treatment.

Practice Questions

1. What is dysplasia and how is it related to cervical cancer?
2. List, in order, the seven given categories of Pap test results, from least severe to most severe.
3. A patient receives an Atypical result on her Pap test. What does this signify and what treatment/follow-up would be appropriate?
4. Describe your follow-up recommendation for a CIN Grade 2 test result.
5. What would you advise for a patient with test results indicating any degree of dysplasia or carcinoma?

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Dysplasia indicates the presence of abnormal cells in the squamous epithelium of the cervix. This condition is considered potentially cancerous and should be referred to a specialist for further diagnosis.
2. The categories are:
 - Normal
 - Atypical
 - CIN Grade 1
 - CIN Grade 2
 - CIN Grade 3
 - Invasive squamous cell carcinoma
 - Adenocarcinoma
3. An Atypical result signifies the presence of some abnormal, but not potentially cancerous, cells. The clinician should look for the presence of cervicitis or vaginitis; treat, if present; and then repeat the Pap test in three weeks to get another reading.
4. A CIN Grade II result indicates mild dysplasia and should be referred to a specialist for further diagnosis.
5. A test result of CIN Grade I, II, III or carcinoma should be referred to a specialist for further evaluation and/or treatment.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to the Section II on the next page.

Part II:
Other Sexually Transmitted Diseases

10 other sexually transmitted diseases are described:

1. Syphilis
2. Gonorrhea
3. Chlamydia Trachomatis
4. Lymphogranuloma Venereum
5. Genital Warts
6. Genital Herpes
7. Granuloma Inguinale
8. Chancroid
9. Infestations
10. Pelvic Inflammatory Disease (PID)

1. Sexually Transmitted Diseases: Introduction

Introduction

The term sexually transmitted disease (STD) is used for certain infections which are almost always passed on by sexual contact. This happens because:

1. The micro-organisms that cause them usually live in the infected person's genitals - or in some other place (such as mouth or anus) where they have been put by sexual activity; and because:
2. To infect another person, the micro-organisms usually have to enter the body through an orifice (such as the genital opening, anus, or mouth), and sexual activity gives them this chance. The first symptoms of disorder appear on the part of the body that has been in contact with the infected part of the infected person.

Otherwise, these disorders have little in common. Some are caused by bacteria, some by viruses, some by other micro-organisms. Some are rare; some are epidemic. Some may only be painful or troublesome; others, if untreated, can be crippling or fatal. And at the same time, there are also a number of other infections, not officially classified as STD, but typically passed on by or associated with sexual activity.

Prevention of Sexually Transmitted Disease

There is no immunity to STD or vaccine against it. But various measures can help reduce the chances of infection:

1. treatment of STD in sexual partners;
2. use of a condom by the male partner;
3. use of some contraceptive foams, contraceptive creams, contraceptive jellies, contraceptive sponges;
4. inspection of the male penis, for an ulcer or sore, or for infectious discharge from the penis tip;
5. urinating immediately after intercourse; and possibly
6. washing the genitals before and after intercourse.

In practice the first three methods are probably the best.

Note that:

1. As an anti-STD measure, a condom needs to be put on before any sexual activity begins.
2. To wash out the vagina after intercourse, a low-pressure douche can be used. But no vaginal washing should be carried out if the contraceptive method used involves a foam, jelly, or cream, whether alone or with diaphragm, condom, or sponge.

The next 6 information sections contain descriptions of the symptoms, causes, and recommended treatments for ten types of sexually transmitted diseases.

Practice Questions

1. A variety of micro-organisms are responsible for causing STD yet all share two characteristics. What are these two factors?
2. Name at least 5 measures that can reduce the chance of infection by STD.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. The two characteristics shared by micro-organisms causing STD are:
 - (1) They live and thrive best in body orifices such as the genitals (or mouth or anus).
 - (2) They must be spread through close body contact, usually through sexual intercourse.

2. The measures that can reduce the chance of infection by STD are:
 - (1) early treatment of sexual partners
 - (2) use of condom
 - (3) use of contraceptive foam, jelly, cream, or sponge
 - (4) inspection of penis for an ulcer, sore, or discharge
 - (5) urinating immediately after intercourse
 - (6) washing genitals before and after intercourse

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 2 on the next page.

2. Syphilis

Description and Cause

Syphilis is sometimes nicknamed "the pox" or "scab." It is the most serious of sexual infections. Its prevalence varies. Worldwide, there are about fifty million cases.

Syphilis is caused by bacteria shaped like corkscrews: "spirochetes." These thrive in the warm, moist linings of the genital passages, rectum, and mouth, and can live in concentrated sites (sores) on the skin surface, but die almost immediately outside the human body. So the infection always spreads by direct physical contact, and in practice almost always by sexual contact. Whether the probing organ is penis, tongue, or (occasionally) finger, and whether the receiving organ is mouth, genitals, or rectum, a syphilitic site on either one can infect the other. Very occasionally, syphilis does occur from close nonsexual contact (and cases have occurred in doctors and dentists from their professional work); but it cannot be spread by physical objects such as lavatory seats, towels, or cups. It can, however, be inherited from an infected mother, resulting sometimes in stillbirth or deformity, and in other cases resulting in hidden infection that causes trouble later.

There is an "incubation period," between syphilis infection and showing the first signs - always between 9 days and 3 months, and usually 3 weeks or more. About 1,000 germs are typically picked up on infection. After 3 weeks these have multiplied to 100 to 200 million. If the disorder is untreated, they can invade the whole body, eventually causing death.

Symptoms

Syphilis has 4 stages. Each has typical signs and symptoms, but these can vary or be absent.

1. Primary Stage:

The first sign is in the part that has been in contact with the infected person: genitals, rectum, or mouth. A spot appears and grows into a painless sore that oozes a colorless fluid (but no blood). This lesion is known as a chancre. The chancre feels like a button: round or oval, firm and just less than 1.3 cm across. A week or so later, the glands in the groin may swell - but they do not usually become tender, so it may not be noticed. There is no feeling of illness, and the sore heals in a few weeks without treatment.

2. Secondary Stage:

This stage occurs when the bacteria have spread through the body. It can follow the primary stage immediately, but usually there is a gap of several weeks. The person feels generally unwell. There may be headaches, loss of appetite, general aches and pains, sickness, and perhaps fever. Also there are breaks in the skin, and sometimes a dark red rash, lasting for weeks or even months. The rash appears on the back of the legs and the front of the arms, and often too on the body, face, palms, and soles.

The rash may be flat or raised, does not itch, is not infectious, and looks like many other skin complaints. Other symptoms can include: hair falling out in patches; sores in the mouth, nose, throat, genitals, or in soft folds of skin; and swollen glands throughout the body. The sores - like the original primary-stage sore - are very infectious. All these symptoms eventually disappear without treatment, after anywhere from 3 weeks to 9 months.

3. Latent Stage:

This stage may last from anywhere to a few months to 50 years. There are no symptoms. After about 2 years, the person ceases to be infectious (though a woman can still sometimes give the disease to a baby she bears). But presence of syphilis can still be shown by blood tests.

4. Tertiary Stage:

This stage occurs in about one-quarter of those who have not been treated earlier. The disease now shows itself in concentrated form and often causes permanent damage in one part of the body.

Common are ulcers in the skin and lesions on ligaments, joints, or on bones. Tertiary syphilis is more serious if it attacks the heart, blood vessels, or nervous system. It can then kill, blind, paralyze, cripple, or render insane.

Diagnosis

Syphilis is not easy to diagnose, since its symptoms are often mild or indistinct. Here are two methods (but remember that neither method works all the time, so repeat tests are important).

1. Dark-field microscopic examination of pus from the chancre (look for spiral-shaped organism).
2. There are a number of blood tests (Serologic Test for Syphilis [STS]) which detect antibodies to the spirochete. The health care provider should be familiar with the locally available tests.

Treatment

Early Syphilis (primary, secondary and latent syphilis of less than one year's duration)

1. Benzathine penicillin G: 2.4 million units intramuscularly. For patients allergic to penicillin, use:
2. Tetracycline: 500 mg orally four times a day for 15 days.

Syphilis of more than one year's duration

1. Benzathine Penicillin G: 2.4 million units intramuscularly once a week for three successive weeks. For patients allergic to penicillin, use:
2. Tetracycline: 500 mg orally four times a day for 30 days.

Epidemiologic treatment

Persons exposed to infectious syphilis within the preceding 3 months should be treated for early syphilis.

Neurosyphilis

Tertiary syphilis affecting the nervous system should be treated by a specialist.

Syphilis in Pregnancy

Treatment is as above.

Practice Questions

1. Describe the cause of syphilis and how it is transmitted.
2. For each of the four stages of syphilis briefly describe the possible signs and symptoms and the length each stage may last.

Signs/Symptoms

Length

Incubation period:

Primary stage:

Secondary stage:

Latent stage:

Tertiary stage:

3. How can syphilis be diagnosed?
4. Give two alternative treatments for known exposure to syphilis or syphilis of less than a year's duration.
5. Give two alternate treatments for syphilis of more than a year's duration.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Syphilis is caused by corkscrew shaped bacteria called spirochetes, which thrive in the warm moist linings of the genital tract, mouth, and anus. Syphilis is spread by direct physical contact - usually sexual - between genital, mouth, or anal areas. A pregnant mother can pass the disease to her child.

2.

	<u>Signs/Symptoms</u>	<u>Length</u>
Incubation period:	None	9 days - 3 months
Primary stage:	A firm roundish painless sore on area of contact. May ooze a colorless fluid. Will heal without treatment. Possible swelling of glands in genital area.	Several weeks
Secondary stage:	General sickness - headaches, aches and pains, loss of appetite, fever. Rash or breaks in skin. Sores or swollen glands.	3 weeks - 9 months
Latent stage:	No symptoms	Months - 50 years
Tertiary stage:	Ulcers on skin, lesions on ligaments, joints, or bones, can attack vascular or nervous systems causing paralysis, insanity, or heart failure death.	

3. Syphilis must be definitely diagnosed by laboratory tests.
 - (1) dark-field microscope examination of pus from sore; spirochetes are visible.
 - (2) Serologic Test for Syphilis (STS)

4. Treatment for early syphilis:
 - (1) Benzathine penicillin G: 2.4 million units intramuscularly.
 - (2) Tetracycline: 500 mg. orally four times a day for 15 days.

3. Gonorrhea

Description and Cause

Gonorrhea (sometimes nicknamed "the clap") has become epidemic in recent years - partly because it is so easy for a woman to have it without knowing it. Several infections in a person in a single year are not uncommon. Worldwide, there are about 150 million cases.

Like syphilis, gonorrhea:

1. is caused by a bacterium that thrives in the warm moist lining of urethra, vagina, rectum, or mouth;
2. is normally only passed on by sexual contact, but may sometimes be passed on by close body contact or from an infected mother; and
3. cannot be picked up from objects.

Symptoms

In women, the incubation is longer and the eventual symptoms (if any) are much less severe or identifiable than in men. In women, there may be discomfort on urinating, more frequent urination, and vaginal discharge. The discharge is distinctively yellow, with unpleasant odor - but this may be unnoticed due to the typically small quantities involved. Often there are no symptoms. So up to 90% of cases in women occur without the woman being aware of the disease. But she is still just as infectious - and just as much at risk. For if untreated, the infection may spread to:

1. the glands around the vaginal entrance, making them swell, sometimes as large as a chicken's egg;
2. the rectum (because of the closeness of the two openings), causing inflammation and perhaps a discharge; and/or
3. the cervix, uterus, and Fallopian tubes. Fallopian tube infection can result in fever, abdominal pain, backache, painful or excessive periods, and pain during intercourse. If not treated quickly, sterility can result. It can also kill mother and fetus, by causing any future pregnancy to be ectopic or tubal. Even where gonorrhea does not affect the Fallopian tubes, it can result in premature birth, umbilical cord inflammation, maternal fever, and blindness in the infected child. Finally, gonorrhea can spread to the bloodstream and infect bone joints, causing arthritis.

If oral contact results in infection, it is mainly as a sore throat that is often not recognized as gonorrhea. It is also unlikely to infect others, because the lymph tissues where the bacteria can survive are deep in the tonsil area.

5. Treatment for syphilis of over a year's duration:

- (1) Benzathine penicillin G: 2.4 million units intramuscularly once a week for 3 weeks.
- (2) Tetracycline: 500 mg orally four times a day for 30 days.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 3 on the next page.

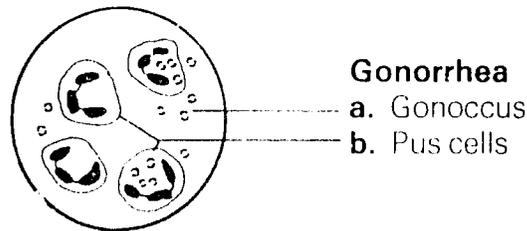
Diagnosis

In order to diagnose gonorrhoea, follow this procedure:

1. Insert speculum and find cervix.
2. Put the cotton tip of a sterile cotton swab into the os (the opening in the cervix) until the cotton disappears, and then rotate the swab 360 degrees.

There are two ways to proceed: one using a culture; one without a culture.

3. (a) Culture: After removing the swab, streak it on Thayer Martin media (a chocolate agar plate) for culturing. Even with culturing, it is possible to have a false negative result. The incubation period is from 2-3 days to 2 weeks. A culture taken before that period is over could prove negative. Likewise, douching could also effect a false negative culture. So if a woman has douched within two days of her visit, she should return for another culture after she has gone without douching for two days.
- (b) Without Culture: Put sample of discharge from cervix on slide, using much care. Then prepare with Gram stain, and examine under microscope. Look for gram negative diplococci.



Treatment

Since syphilis and gonorrhea can be contracted at the same time, it is good to do a blood test for syphilis before treating the gonorrhea. The dose of penicillin used for gonorrhea is enough to mask the syphilis symptoms without killing all the germs.

1. Penicillin: works by blocking cell wall growth. Give 4.8 million units (about 3 grams) intramuscularly at two sites, plus 1 gram Probenecid (taken orally before the injection of penicillin). The Probenecid competes with penicillin in the kidney for excretion.

Or: 3.5 grams Ampicillin and 1 gram Probenecid.

2. Tetracycline: blocks protein synthesis in bacterial cells. 500 mg: one capsule four times a day for seven days, or
3. Doxycycline hyclate: 100 mg, one pill twice a day for seven days. If patient is symptomatic, give her 300 mg immediately, and 100 mg, one pill twice a day for seven days.
4. Combined regimen: Because Chlamydial infections (section 8 of this unit) have been documented in up to 45% of gonorrhea patients the following combined regimen has been recommended.
 - a. Ampicillin: 3.5 grams orally with Probenecid, 1 gram orally, PLUS
 - b. Tetracycline: 500 mg orally four times a day for seven days, or Doxycycline as above.

Practice Questions

1. Describe the cause of gonorrhea and how it is transmitted.
2. Though these symptoms are not often reported, name 3 symptoms that may indicate the early presence of gonorrhea.
3. After gonorrhea has spread its symptoms may be more apparent. Describe symptoms at each site that may indicate the presence of gonorrhea.

Exterior genitals:

Rectum:

Interior genitals:

Bloodstream, joints:

4. Describe three possible treatments for gonorrhea.
5. Describe the combined regimen for gonorrhea and chlamydia.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Gonorrhoea is caused by a bacterium. It is usually passed by sexual contact, primarily genital or anal.
2. The early symptoms of gonorrhoea in women are:
 - (1) frequent urination
 - (2) discomfort upon urination
 - (3) yellow vaginal discharge, with unpleasant odor
3. Later symptoms of gonorrhoea are:

Exterior genitals: swollen glands

Rectum: inflammation or discharge

Interior genitals: fever, abdominal pain, backaches, painful periods, pain during intercourse (similar to chlamydia)

Bloodstream, joints: arthritis
4. Treatments for gonorrhoea:
 - (1) Penicillin - 4.8 million units intramuscularly (or Ampicillin 3.5 grams) plus 1 gram Probenecid orally
 - (2) Tetracycline - 500 mg: one capsule 4 times daily for seven days, or
 - (3) Doxycycline hyclate - 100 mg, one pill twice a day for seven days
5. Combined regimen:
 - (a) Ampicillin: 3.5 grams orally with 1 gram Probenecid orally PLUS
 - (b) Tetracycline: 500 mg orally four times a day for seven days.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 4 on the next page.

4. Chlamydial Infections

Chlamydia trachomatis is a small bacterial micro-organism (approximately 300-400 nm in size) that multiplies within cells. Within this genus are strains causing three distinct diseases, two of which are sexually transmitted. One attacks mucous membranes, especially columnar epithelial cells, with a pattern very similar to that of gonorrhea. This disease is called chlamydia trachomatis. The other is lymphogranuloma venereum, which spreads into regional lymph nodes from a primary genital lesion. By far the most common genital chlamydial infection is that involving mucous membranes of the genital tract.

Chlamydia Trachomatis

Description and Cause

Chlamydial infections are spread through sexual contact and can be passed by a pregnant mother to her unborn child. Chlamydia trachomatis infections are frequently found in association with other venereal diseases, including gonorrhea. In Western populations, it is found in approximately half of cases diagnosed as gonorrhea.

Symptoms

In women a high proportion of early infections are asymptomatic. The disease first affects the cervix as a mucopurulent (containing mucus and pus) cervicitis. It may then spread via the endometrium to the Fallopian tubes and cause a painful pelvic inflammatory disease, characterized by abdominal pain and cramps, fever, and menstrual disturbances.

If untreated, chlamydia trachomatis has effects similar to gonorrhea, including sterility.

Diagnosis

Definitive diagnoses can only be made by isolating the organism from the genital tract. Only isolation of the organism in tissue culture presently gives a high sensitivity. In the absence of such diagnostic facilities, the diagnosis is generally made by excluding gonorrhea, trichomoniasis, and monilia in diseases presenting urethritis, cervicitis, or pelvic inflammatory disease.

A further diagnostic problem is the high percentage of common infections of gonorrhea and chlamydia and the fact that the treatment of choice is different for each condition. Residual infection after diagnosis and treatment of gonorrhea is an indication for treatment for chlamydia. It is better to treat for both initially.

Treatment

Tetracycline: 500 mg, by mouth, four times a day for at least seven days.

An alternative that should be used for pregnant women is: Erythromycin stearate: 500 mg every six hours for at least seven days, or 250 mg every six hours for 14 days.

Treat sexual partner of woman infected with chlamydia.

Lymphogranuloma Venereum (Bubos)

Description and Cause

Lymphogranuloma venereum is most prevalent in the tropics, where it accounts for 2-6% of sexually transmitted diseases. It can be contracted from infected bedding or clothing as well as from sexual intercourse.

Symptoms

The incubation period is from 5-21 days. The first symptom is a small painless blister or ulcer on the cervix, vagina, or rectum. This will heal in a few days. Then large dark lumps develop in the glandular areas of the groin. These open to drain pus, scar, then open again. There may also be fever, headaches, and vomiting.

Treatment

Tetracycline 500 mg. One capsule four times a day for 14 days.

Practice Questions

1. Name some symptoms shared by gonorrhoea and chlamydia trachomatis.
2. Name two diagnostic indicators, outside of laboratory procedures, that may signal the presence of a chlamydia trachomatis.
3. Describe the treatment for chlamydia trachomatis.
4. Describe the symptoms of lymphogranuloma venereum (bubos).
5. Give the treatment for lymphogranuloma venereum.
6. Give the cause of these two infections and describe how they may be spread.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Symptoms shared by chlamydia trachomatis and gonorrhea are:
 - abdominal pain or cramps
 - backache
 - fever
 - menstrual disturbances
 - vaginal discharge
2. Two indicators of chlamydial trachomatis infection are:
 - (1) residual infection after treatment of gonorrhea
 - (2) given the clinical symptoms (those described above and/or a festering cervicitis) ruling out the presence of gonorrhea, moniliasis, or trichomoniasis may indicate chlamydia.
3. The treatment for chlamydia trachomatis is:
 - (1) Tetracycline: 500 mg orally four times a day for at least seven days, or (for pregnant women) -
 - (2) Erythromycine stearate: 500 mg every six hours for at least seven days, or 250 mg every six hours for 14 days
4. The symptoms of lymphogranuloma venereum include:
 - painless lesion on cervix, vagina, or rectum
 - dark lumps in the groin that become open draining sores; these heal, scar, then reopen.
 - possible fever, headaches and vomiting
5. Treatment for lymphogranuloma venereum is: Tetracycline: 500 mg orally 4 times a day for 14 days.
6. Both infections are caused by strains of a small bacterium. Chlamydia trachomatis is spread through intimate sexual contact. Lymphogranuloma venereum may also be spread by contact with infected bedding or clothing.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 5 on the next page.

5. Genital Warts, Genital Herpes, Granuloma Inguinale, and Chancroid

Genital Warts (Condylomata Acuminata)

Description and Cause

This disorder is caused by a sexually transmitted virus. Its incubation period is one to six months.

Symptoms

Soft, moist, white, pink or red, very small projections on the vulva, vaginal wall, cervix, or perineum.

Treatment

Very careful application of 25% podophyllin dissolved in tincture of benzoine every other day until warts disappear. Using a cotton tipped applicator, apply podophyllin only to warts. Avoid surrounding healthy tissue which may be protected with mineral oil, as podophyllin is very caustic and can damage healthy tissue. Podophyllin should not be used in pregnancy.

Genital Herpes

Description and Cause

Herpes is caused by sexually transmitted virus. The first lesion usually appears four to seven days after intercourse with an infected partner. Herpes frequently becomes a chronic condition and is contagious whenever there are lesions.

Symptoms

Itching, soreness, small sores with a colorless discharge on the labia, clitoris, perineum, vagina, and cervix.

Treatment

There is no known curative treatment for herpes. The recurring nature of herpes should be explained to the patient. Application of a solution of 10 cc of salt in 100 cc of boiled water may ease discomfort and aid healing.

Patient should be warned that whenever lesions are present, herpes is contagious and she should either refrain from intercourse or her mate should wear a condom.

A new drug, Acyclovir, can shorten symptoms and duration of viral shedding in initial episodes of genital herpes. The dose: 5 mg per kilogram of body weight, intravenously every 8 hours for 5 days for very sick patients or 200 mg orally 5 times a day for 10 days. Acyclovir orally, 200 mg 3 times daily for 4-6 months, reduces the frequency of recurrences. This treatment is very expensive.

- or -

Acyclovir ointment 5% applied to all lesions six times a day for seven days relieves pain of Local ulcers.

Granuloma Inguinale

Description and Cause

Gram-negative, rod-shaped bacillus (Donovan body) that is usually contracted during sexual intercourse. The incubation period is from one to twelve weeks.

Symptoms

Red, painless lesion on the vulva, vagina, and/or perineum which ulcerates. Draining lymph nodes are enlarged. The Donovan body can be seen on slide of smear of ulcer stained with hemotoxylin and eosin.

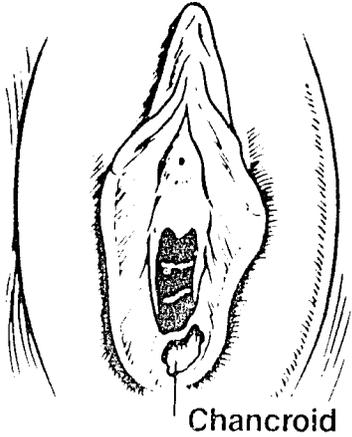
Treatment

Tetracycline: 500 mg, orally four times a day for 14 days.

Chancroid

Description and Cause

Chancroid is caused by a bacillus which is Gram-negative. It is spread through sexual contact. Its incubation period is from three to ten days.



Symptoms

A painful progressive ulcer on the external sex organs, accompanied by swollen glands in the groin area.

Treatment

1. Erythromycin: 500 mg orally four times a day, or
2. Trimethoprim/Sulfamethoxazole (double strength): 160/800 mg orally twice a day, for at least 10 days and until ulcers and lymph nodes have healed.

Treat sexual partners with 10-day regimen, as above.

Practice Questions

1. Name the disorder associated with the following symptoms. Select from: lymphogranuloma venereum, granuloma inguinale, chancroid, genital warts, genital herpes.
 - (a) painful ulcer on exterior genitals, swollen glands:

 - (b) dark lumps in groin that become open sores; these heal and reopen:

 - (c) small, painful sores with colorless discharge:

 - (d) red, painless lesion on genitals, enlarged lymph nodes:

 - (e) small, soft, moist swellings on genitals:

2. Select the statement which applies to each disorder.
 - (a) Lesions appear on exterior genitals only.
 - (b) Lesions appear on interior genitals only.
 - (c) Lesions may appear on both interior and exterior genitals.

(1) Lymphogranuloma venereum	_____
(2) Genital warts	_____
(3) Chancroid	_____
(4) Genital herpes	_____
(5) Granuloma inguinale	_____
3. Give the cause of each infection. Select from bacterium or virus.

	<u>Cause:</u>
(1) Genital warts	_____
(2) Chancroid	_____
(3) Genital herpes	_____
(4) Granuloma inguinale	_____
(5) Lymphogranuloma venereum	_____
4. If a patient has a genital ulcer and also complains of fever and nausea what condition does this suggest?
5. Name the drug and specified dosage for treating lymphogranuloma venereum, and granuloma inguinale.

6. What should you be aware of when administering this drug?
7. Describe the treatment for chancroid.
8. Describe the treatment for genital warts.
9. Describe the treatment for genital herpes.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. (a) Chancroid
(b) Lymphogranuloma venereum
(c) Genital herpes
(d) Granuloma inguinale
(e) Genital warts
2. (1) Lymphogranuloma venereum (c)
(2) Genital warts (c)
(3) Chancroid (a)
(4) Genital herpes (c)
(5) Granuloma inguinale (a)
3. (1) Genital warts virus
(2) Chancroid bacteria
(3) Genital herpes virus
(4) Granuloma inguinale bacteria
(5) Lymphogranuloma venereum bacteria
4. If a patient has fever and nausea, lymphogranuloma venereum would be indicated.
5. The drug recommended for treatment for both disorders is: Tetracycline: 500 mg, orally four times a day for at least 7 days, or 14 days.
6. This dose of Tetracycline can mask, but not cure, syphilis. Test for syphilis before giving Tetracycline.
7. Erythromycin: 500 mg orally four times a day, or
Trimethoprim/sulfamethoxazole: 160/800 mg orally twice a day for at least 10 days and until ulcers have healed. Treat sexual partners with same regimen.
8. Using a cotton-tipped applicator, apply a solution of 25% Podophyllin dissolved in tincture of benzoine on the warts every other day. Protect surrounding tissue with mineral oil.
9. There is no known curative treatment. Applying a solution of 10 cc salt in 100 cc of boiled and cooled water may ease discomfort. If it is an initial episode, Acyclovir can shorten symptoms.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 6 on the next page.

6. Infestations

Description and Cause

There are two main types of infestations in the genital area.

1. Scabies (the "itch") is caused by a tiny mite which burrows beneath the skin to lay her eggs.
2. Pubic lice (or "crabs,") are genital versions of lice that can also occur in other hairy parts of the body. They feed on blood, and cause itching that can be severe.

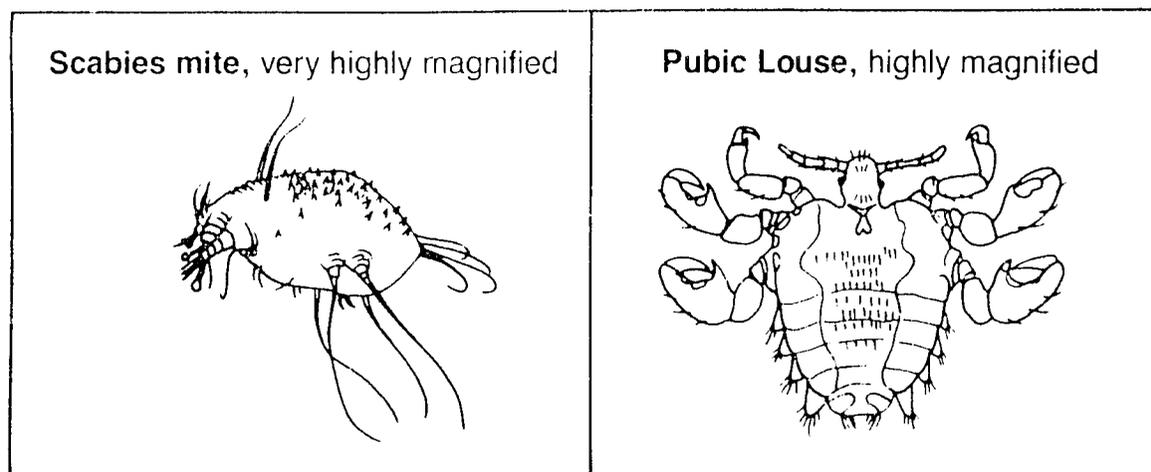
Infestations are spread by sexual or other close body contact. It is usually four to six weeks before symptoms become noticeable.

Symptoms

itchy lumps and tracks occurring between fingers, on buttocks, wrists, and armpits, as well as genitals. The itching is worse in warm conditions.

Treatment

Gamma benzene hexachloride (lindane): one cc in 15 cc of boiled water. Apply to infected areas. One application only to be repeated if necessary in one week. All bed coverings, towels, and underclothes should be washed in hot water.



Practice Questions

1. A patient complains of itchy lumps and tracks on the genitals and in armpits. Name 2 possible causes.
2. Describe the treatment and recommendations to a patient with an infestation.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. Two possible causes are:
 - (1) scabies (mite)
 - (2) pubic lice
2. To treat infestations apply a solution of Gamma benzene hexachloride (one cc in 15 cc sterilized water) to infected area. Repeat, if necessary, in one week. Tell patients to wash all underclothes, towels, and bedding in hot water.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 7 on the next page.

7. Pelvic Inflammatory Disease (PID)

Description and Cause

Pelvic Inflammatory Disease (PID) is a severe bacterial infection of the pelvic area. It is caused by the ascending spread of micro-organisms from the vagina and endocervix to the endometrium, Fallopian tubes and/or contiguous structures. Without immediate treatment, it can cause sterility by scarring the Fallopian tubes and causing them to close. If the tubes are closed, there is no passageway from the ovaries to the uterus so eggs (ova) cannot be fertilized and they cannot travel to the uterus.

There are many causes of pelvic inflammatory disease. The main cause is gonorrhoea and mucopurulent chlamydia. Another is TB. But any bacteria entering the usually sterile uterus can lead to PID. Women who have an intrauterine device are more prone to PID than others. PID is a possible complication of IUD insertion, endometrial biopsy, or abortion. Suspect PID if pelvic pain or tenderness is present.

Symptoms

The common symptoms of acute PID are severe, cramplike, lower abdominal pain, chills and fever, menstrual disturbances, vaginal discharge. The patient will complain of marked pain during her vaginal examination.

If the PID is chronic, the patient may have painful periods, pain during intercourse, infertility and recurrent, low-grade fever. On a vaginal examination, tender pelvic masses may be felt.

Treatment

Control pain with analgesics. Rest is very essential. Sometimes, it may be necessary to delay or prevent menstruation for 2 to 3 months by giving an oral contraceptive pill daily without a break at the end of the cycle.

Antibiotics must be started immediately.

Aqueous Penicillin G: 4.8 million units, injected intramuscularly (in 2 sites) along with Probenecid, 1 gram orally, followed by Ampicillin: 3.5 grams orally - or, better, followed by Doxycycline: 100 mg orally twice a day for 14 days.

If the patient has a fever of over 39⁰C (102⁰F) and has marked tenderness and guarding of the abdomen, or appears toxic, she should be admitted to the hospital.

Infected sexual partners should also be treated.

Practice Questions

1. Pelvic Inflammatory Disease (PID) is a severe bacterial infection of the:
 - (a) vagina
 - (b) uterus and Fallopian tubes
 - (c) urethra
2. Name two possible causes of PID.
3. PID can result as a complication of what three procedures?
4. Name at least five symptoms that may indicate PID.
5. Describe the treatment for PID.
6. You've read about a variety of disorders, from syphilis to genital warts, that may be spread by sexual contact. Name 5 measures you can recommend to your sexually mature women patients to help reduce their possibility of infection.

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. PID is a severe bacterial infection of the: (b) uterus and Fallopian tubes
2. Any of the following may cause PID:
 - (1) gonorrhoea
 - (2) chlamydia trachomatis
 - (3) TB
 - (4) any other bacteria which enters the cervix
3. PID can result as a complication of:
 - (1) IUD insertion
 - (2) endometrial biopsy
 - (3) menstrual regulation
4. Symptoms of PID include:
 - (1) cramps
 - (2) chills and fever
 - (3) menstrual disturbances
 - (4) vaginal discharge
 - (5) pain during exam
 - (6) painful periods
 - (7) pain during intercourse
 - (8) tender pelvic masses
5. To treat PID give analgesics for pain control. Tell the patient to rest. Inject 4.8 million units of Aqueous Penicillin G in 2 sites, along with Probenecid: 1 gram orally, followed by Ampicillin: 3.5 grams orally, or, better, followed by Doxycycline: 100 mg orally twice a day for 14 days.
6. The recommendations to reduce the spread of STD are:
 - (1) Early treatment of all sexual partners.
 - (2) Use contraceptive foam, jelly or cream.
 - (3) Use a condom.
 - (4) Inspect penis for a sore or discharge.
 - (5) Urinate after intercourse.
 - (6) Wash genitals before and after intercourse.

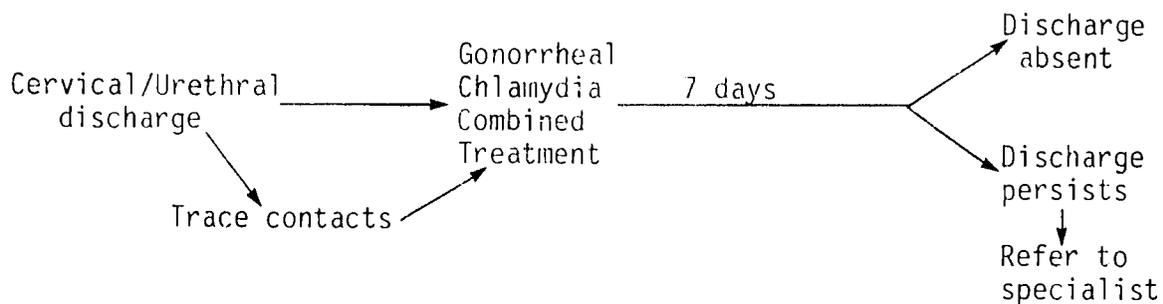
The first three methods are the most effective.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go on to section 8 on the next page.

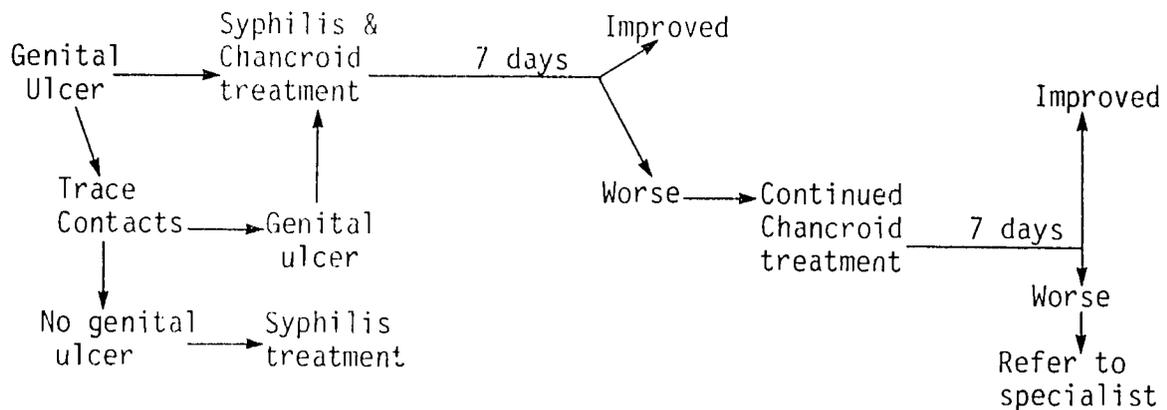
8. Treatment Protocols

Health clinicians working in rural areas may not have available laboratory facilities for diagnosis of the infections and sexually transmitted diseases discussed here. Under such circumstances a simplified treatment protocol, based upon symptoms, can be used for (1) cervical/urethral discharge and (2) for single genital ulcerated lesions. (Multiple ulcers and lesions of the vulva and cervix are almost always herpes. At the present time, there is no cure for this infection.) The treatment protocols are outlined below.

(1) Protocol for Treatment of Cervical/Urethral Discharge



(2) Protocol for Treatment of Single Genital Ulcers



Practice Questions

1. What is the first step in each of the two protocols described?
2. Following this protocol, what treatment would you give to a woman with an unidentified cervical or urethral discharge?
3. If after seven days the discharge persists, what would be your next step?
4. Following this protocol, what treatment would you give to a woman with an unidentified genital ulcer?
5. If the ulcer is worse after seven days, what should you do?
6. If the patient is unimproved after another week, what should you do?
7. You have traced the sexual contacts of a woman with a genital ulcer. Describe the treatment in each case.
 - (a) has no genital ulcer
 - (b) has genital ulcer

To the Learner: Turn the page to check your answers.

Answers to Practice Questions

1. The first step is to trace sexual contacts.
2. Treat an unidentified discharge with combined gonorrhoea and chlamydia treatment.
3. After seven days, refer the patient to a specialist.
4. Treat an unidentified genital ulcer with a combined treatment for syphilis and chancroid.
5. If after seven days the condition persists, continue the chancroid treatment.
6. After another week refer to a specialist.
7. (a) treat for syphilis
(b) treat for combined syphilis/chancroid.

To the Learner: If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, you have finished in information sections of this module. Briefly study the sections again. Then take the Post-test on the next page.

Post-test

To the Learner: This test will tell you how much you have learned from this self-instructional module. After taking the test, check your answers on the page following the test. Be sure to use a separate sheet of paper for recording your answers.

1. Name three general factors that may encourage the onset of infection or disease in the female reproductive system.
2. Describe normal vaginal discharge, including color and consistency changes over a monthly cycle.
3. State three characteristics of abnormal vaginal discharge.
4. Identify the two characteristics shared by the micro-organisms which cause sexually transmitted diseases or infections.
5. Name five measures you can recommend to your women patients to reduce their chances of infection by STD.

Below are descriptions of the symptoms of patients with five different vaginal infections. For each situation deduce the name of the most likely infection, give its cause, and prescribe a possible treatment. Select from the following infections: moniliasis, trichomoniasis, nonspecific vaginitis, Gardnerella vaginitis, cervicitis.

6. A patient with a young baby has a persistent yellowish vaginal discharge. She reports pain upon intercourse, low back pain, and spotting between periods.

Most likely infection:

Cause of infection, contributing factors:

Treatment (include recommendations to patient):

7. The patient complains of itching and soreness of the vulva, and a smelly vaginal discharge. Upon examination the discharge appears foamy and yellow-green in color.

Most likely infection:

Cause of infection, method of transfer:

Treatment (and recommendations to patient):

8. The patient has a paste-like vaginal discharge with an unpleasant odor. It is grayish in color. Examining a specimen of the discharge under the microscope you note a lack of normal lactobacilli.

Most likely infection:

Cause:

Treatment and recommendations:

9. The patient has a thick white discharge which has a strong odor. She complains of itching and irritation in the genital area.

Most likely infection:

Cause:

Treatment and recommendations:

10. The patient reports pain while urinating. Upon speculum examination you note a heavier than normal white vaginal discharge. You cannot identify a specific pathogen after examining the discharge under a microscope.

Most likely infection:

Cause:

Treatment and recommendations:

Following are descriptions of the symptoms of patients with ten different types of sexually transmitted diseases. For each case deduce the name of the disorder, give its cause and prescribe a possible treatment. Select from the following diseases and infestations: syphilis, gonorrhoea, chlamydia trachomatis, lymphogranuloma venereum (bubos), granuloma inguinale, chancroid, genital warts, genital herpes, scabies/lice, Pelvic Inflammatory Disease.

11. The patient complains of small sores on the vulva which cause itching and soreness. You note the sores give off a colorless discharge.

Most likely condition:

Cause:

Treatment and recommendations:

12. The patient feels generally unwell - has a low fever, backaches, pain during intercourse, and, lately, more pain than usual during her period. Glands in the groin are swollen.

Most likely condition:

Cause:

Treatment and recommendations:

13. The patient has a painful sore on the labia. Glands in the groin are swollen.

Most likely condition:

Cause:

Treatment:

14. The patient has severe abdominal cramps, chills, and fever. She has had an abnormal vaginal discharge for some time. The pelvic exam is very painful for her. You rule out gonorrhea after examining the cervical discharge under the microscope.

Most likely condition:

Cause:

Treatment:

15. The patient complains of constant itching in the genital area, which gets worse in warm weather. You examine her and notice no unusual kind of vaginal discharge, but note small lumps on the mons veneris.

Most likely condition:

Cause:

Treatment:

16. The patient has abdominal pain, low fever and menstrual disturbances. Upon examination you note cervicitis which has a pus-filled discharge. Patient reports being treated for gonorrhea previously.

Most likely condition:

Cause:

Treatment:

17. The patient is not in pain but has noticed a red lesion on the perineum.

Most likely condition:

Cause:

Treatment:

18. The patient reports feeling unwell with bodily aches and pains, loss of appetite, headaches. She has a slight rash on the back of the legs.

Most likely condition:

Cause:

Treatment:

19. The patient has large festering sores in the glandular area of the groin. You note scar tissue from previous outbreaks. The patient reports general sickness - low fever and frequent headaches.

Most likely condition:

Cause:

Treatment:

20. The patient reports many small bumps on the vulva and within the vagina. Upon examination you find them to be pinkish, soft, and moist.

Most likely condition:

Cause:

Treatment:

21. Describe a simple treatment protocol for cervical/urethral discharge, for use where laboratory diagnosis is not possible.
22. Describe a simple treatment protocol for single genital ulcers, for use where laboratory diagnosis is not possible.
23. What action should you take on the following results from a Pap test?

- Atypical cells present, repeat to rule out:

- Grade 2 CIN:

- Squamous cell carcinoma:

Answers to Test

1. The factors that encourage infection include:
 - lowered resistance
 - poor nutrition
 - illness
 - cuts or abrasions
 - factors that affect the quantity and acidity of vaginal mucus including: menstruation, pregnancy, birth control pills, other hormones, antibiotics, non-medicinal douches, diabetes, pre-diabetes, menopause
2. Normal vaginal discharge is usually clear just after menstruation, getting thicker and in greater quantity at the time of ovulation.
3. Three characteristics of abnormal vaginal discharge are: unpleasant odor, unusual color or consistency, and irritation or itching.
4. The two characteristics are:
 - STD causing organisms live and thrive best in body orifices such as the genitals, mouth or anus.
 - They must be spread through close body contact usually through sexual intercourse.
5.
 - (1) early treatment of all sexual partners;
 - (2) use of some contraceptive foams, contraceptive creams, contraceptive jellies, contraceptive sponges;
 - (3) use of a condom by the male partner;
 - (4) inspection of the male penis, for an ulcer or sore, or for infectious discharge from the penis tip;
 - (5) urinating immediately after intercourse; and possibly
 - (6) washing the genitals before and after intercourse.

In practice the first three methods are probably the best.
6. Condition: cervicitis
Cause: bacteria, fungus, protozoans or viruses; childbirth and use of birth control pills may contribute.
Treatment: (1) Treat specific infective cause with appropriate antibiotics.

- (2) If needed, cauterize cervix with silver nitrate or Trichloroacetic Acid.
- (3) Follow with use of Sulfa Cream, 1 tube.
- (4) Repeat cauterization 4-6 weeks later if needed.

7. Condition: trichomoniasis

Cause: one-celled animal parasite

Treatment: (1) Metronidazole: 250 mg orally, 3 times a day for seven days or 2 grams in 24 hours. Patient's partner must be treated. Tell patients to abstain from alcohol and use a condom.

If Metronidazole is contraindicated or unavailable, then use:

(2) Vinegar douches 3 times weekly (45 ml vinegar to 1 liter of boiled water).

(3) Povidone-iodine vaginal gel: one applicator full well into the vagina for 30 days.

(4) Prophylaxis.

Since only the woman can be treated in (2) and (3), her mate should use a condom to prevent the woman from being reinfected.

8. Condition: Gardnerella vaginitis

Cause: rod-shaped bacteria

Treatment: any of the following:

(1) Metronidazole: 500 mg orally twice daily for 5 days

(2) Ampicillin: 500 mg orally 4 times daily for 5 days

(3) Sulfa Cream: one applicator full is inserted well into the vagina daily for two weeks. Or, if the woman is allergic to sulfa, use:

(4) Oxytetracycline suppositories: The suppositories should be inserted well into the vagina once a night for 10 nights.

9. Condition: moniliasis

Cause: yeast-like fungus

Treatment: any of the following:

- (1) Vinegar douche: to be used once a week (45 ml of vinegar in one liter of boiled water)
- (2) Gentian violet vaginal inserts: to be inserted into the vagina once a night for 14 nights
- (3) Miconazole cream: one applicator full to be inserted vaginally at bedtime for 7 days
- (4) Nystatin: 100,000 units to be inserted vaginally twice daily for 7 days
- (5) Clotrimazole: one suppository to be inserted vaginally for 7 days

Treat partners if condition recurs.

10. Condition: nonspecific vaginitis

Cause: may be a bacteria, fungus, or protozoan

Treatment: either of the following:

- (1) Sulfa Cream: one applicator twice a day for two weeks, or
- (2) Povidone-iodine douche: 30 ml in one-half liter sterilized water, once a day for one week

11. Condition: genital herpes

Cause: virus, sexually transmitted

Treatment: no known cure. Applying a solution of salt water (10 cc salt in 100 cc sterilized water) may ease discomfort. Acyclovir can shorten symptoms and viral shedding in initial episodes. Oral acyclovir may reduce the frequency of recurrences.

12. Condition: gonorrhoea

Cause: bacteria

Treatment:

(1) Penicillin: works by blocking cell wall growth. Give 4.8 million units (about 3 grams) intramuscularly, plus 1 gram Probenecid (taken orally before the injection of penicillin). The Probenecid competes with penicillin in kidney for excretion so that high blood levels are obtained.

Or: 3.5 grams Ampicillin and 1 gram Probenecid.

Alternative treatments:

(2) Tetracycline: blocks protein synthesis in cells. 500 mg: one pill four times a day for seven days.

(3) Doxycycline: 100 mg, one pill twice a day for seven days. If patient is symptomatic, give her 300 mg immediately and 100 mg: one pill twice a day for seven days.

(4) Combined regimen for gonorrhoea and chlamydial infections:

(a) Ampicillin: 3.5 grams orally with Probenecid 1 gram orally, plus

(b) Tetracycline: 500 mg orally four times a day for seven days

13. Condition: chancroid

Cause: bacteria

Treatment: either of the following:

(1) Erythromycin: 500 mg orally 4 times a day

(2) Trimethoprim/sulfamethoxazole (double strength): 160/800 mg orally twice a day for at least 10 days.

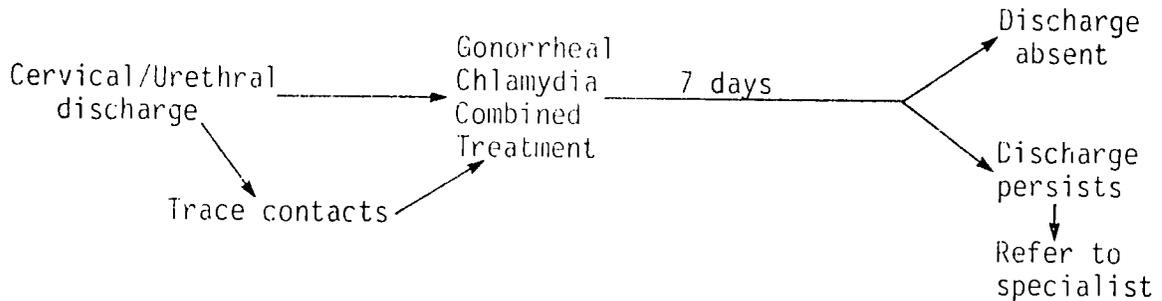
14. Condition: Pelvic Inflammatory Disease (PID)
- Cause: any bacteria entering the uterus, often gonorrhea or chlamydia
- Treatment: Control pain, prescribe rest. Either of the following:
- Aqueous Penicillin G: 4.8 million units, injected intramuscularly (in 2 sites) along with Probenecid, 1 gram orally, followed by Ampicillin: 3.5 grams orally - or, better, followed by Doxycycline: 100 mg orally twice a day for 14 days.
15. Condition: infestation of scabies or lice
- Cause: mite (scabies) or public lice
- Treatment: Apply a lindane solution (Gamma Benzene hexachloride) - one cc in 15 cc sterilized water - to infected areas. Wash all underclothes, towels, and bedding in hot water.
16. Condition: chlamydia trachomatis
- Cause: bacteria
- Treatment: Tetracycline: 500 mg orally four times a day for at least 7 days, or in pregnant women Erythromycin 500 mg every six hours for at least 7 days. Treat sexual partner.
17. Condition: granuloma inguinale
- Cause: rod-shaped bacillus
- Treatment: Tetracycline: 500 mg four times a day for 14 days
18. Condition: syphilis (secondary)
- Cause: spirochete bacteria, corkscrew-shaped
- Treatment: Benzathine penicillin G: 2.4 million units intramuscularly.
- For patients allergic to penicillin.
- Tetracycline: 500 mg orally four times a day for 15 days.
19. Condition: lymphogranuloma venereum (bubos)
- Cause: bacteria, may be caught from bedding or clothing as well as intimate contact
- Treatment: Tetracycline: 500 mg four times a day for 14 days.

20. Condition: genital warts

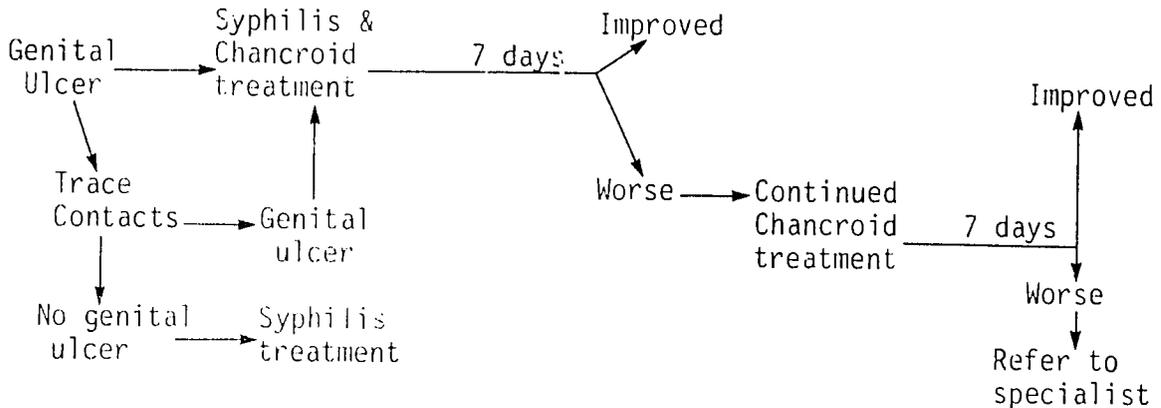
Cause: virus

Treatment: application to infected areas of solution of 25% Podophyllum dissolved in tincture of benzoin every other day

21. Protocol for Treatment of Cervical/Urethral Discharge:



22. Protocol for Treatment of Single Genital Ulcers:



23. Atypical cells present: Examine patient for cervicitis or vaginitis. Treat, if present, with appropriate antibiotics. Repeat smear in three weeks.

Grade 2 CIN: Refer to specialist for biopsy and further evaluation.

Squamous cell carcinoma: Refer to specialist for biopsy and treatment.